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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MATTINGLY, STANGER & MALUR, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314			HUNG, YUBIN	
			ART UNIT	PAPER NUMBER
			2625	

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/643,759

Applicant(s)

OKAYAMA ET AL.

Examiner

Yubin Hung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on January 2, 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 19-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18, 25-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment/Arguments

1. This action is in response to amendment filed on January 2, 2004.
2. A certified copy of the Japanese 11-282425 application in support of applicant's claim for foreign priority was received on January 2, 2004.
3. The document entitled "CCTV Surveillance System Basic Course" listed in PTO-1449 has been considered. All other listed references have previously been considered in the first action.
4. In view of applicant's amendment, the objection to the specification has been withdrawn.
5. In view of the applicant's amendment, the 35 USC § 112 rejections have been withdrawn.
6. In view of the applicant's amendment, the 35 USC § 102 (e) rejection has been withdrawn.

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7. Applicant's arguments/amendment filed 01/02/04 have been fully considered but they are not persuasive. Therefore, 35 USC 103 rejections of claims 1-18 are respectfully maintained.

8. In remarks Applicant argued in substance (P. 18, 3rd paragraph, line 1 through P. 20, line 3) that none of the recited references (Adler et al. Manjunath et al., Admitted Prior Art (APA)) disclose or suggest that the supplement information image data is visible when displayed. To support this point, Applicant stated, among other things, that in Adler et al. [Col. 7, lines 28-37] the quantized DCT coefficients of the image are combined by using "invisible" watermark. (P. 19, 2nd paragraph.)

However, in Col. 7, lines 28-29 Adler et al. recites "illustrate the *quasi* invisibility of the watermark," which is not the same as *invisible*. Moreover, it is well known in the art that there is a wide range in the visibility of a watermark that usually depends on the intended applications. For example, Braudaway et al. (US 5,530,759) discloses a system for placing a *visible* watermark on a digital image that allows the content of the image to be viewed clearly, but discourages unauthorized use of the image. [See Abstract.] Therefore, the argument that Adler et al. does not disclose or suggest that the supplement information image data is visible when displayed is not persuasive.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 25-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 25 recites the following limitations: (a) "said first image data quantized by said first encoding means" and (b) "said second image data quantized by said second encoding means" in P. 14, lines 18-19 and line 20, respectively, of the amendment. There is insufficient antecedent basis for this limitation in the claim because in the first (respectively, second) encoding means only "said first (respectively, second) image data **subjected to said DCT conversion**" is quantized. Claims 26, 27, being dependent of claim 25, are similarly rejected.

(Note: for examination purpose, hereinafter "said first image data quantized by said first encoding means" and "said second image data quantized by said second encoding means" will be interpreted to mean "said first image data *subjected to said DCT conversion* quantized by said first encoding means" and "said second image data *subjected to said DCT conversion* quantized by said second encoding means.")

Examiner's Comments

12. Regarding claim 25, it appears that the purpose of P. 14, line 23 – P. 15, line 4 is to decode the encoded first image data. If this is the case, "said first image data" in P. 14, last line should have been the combined image resulted from the operation of P. 14, lines 18-22 and should be clearly and unambiguously described here. (Note that how this "first image data" is interpreted has no bearing on the examination of claims 25-27.)

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Amended claims 1-5, 11, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adler et al. (US 6,275,599), in view of Manjunath et al. (US 6,332,030) and admitted prior art (P. 2, lines 11-14 and 19-22 of the Application, hereinafter referred to as APA).

2. Regarding claim 1, Adler et al. discloses a system [Fig. 1] with an image processor [Fig.1, references 102-107] that combines the quantized discrete cosine transform (DCT) coefficients of an image with supplement information image

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(watermark in this case) and subsequently applies Huffman encoding to the combined result [Fig. 1, reference 107; Col. 3, lines 4-20].

(RE new limitation): In addition, Adler et al. discloses that the JPEG supplement information image data (e.g., watermark) is visible in the combined JPEG data when displayed [Col. 7, lines 28-37. Note that being "quasi" invisible still is visible].

Adler et al. fails to teach the following:

- Inclusion of a camera
- supplement information image generation means
- using quantized DCT coefficients of supplement information image as well

However, Examiner takes Official Notice that it is well known in the art that a surveillance system typically includes one or more cameras (and one or more image display monitors, for that matter) and APA teaches the use of a supplement information generation means to produce bit maps (i.e., images) of date and time information. Furthermore, in Fig. 15 Manjunath et al. teaches to quantize the DCT coefficients of the supplement information image (the signature image in this case) before combination to provide control over the quantity and quality of the supplement information image to be combined.

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Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Adler et al. by including a surveillance camera and a supplement information image generation means (taught by admitted prior art), as well as quantizing the DCT coefficients of the supplement information image (taught by Manjunath) before combining it with the quantized DCT coefficients of the main image. In this way a system that can capture images, provide their associated supplement information such as image capture date and time that can help with the analysis of the images and/or the circumstances of their capture, reduce data size (by quantization and Huffman encoding), and take advantage of the linearity of the de-quantization and inverse DCT (as part of decompressing a JPEG image) to display the superimposition of an image and its associated supplement information image without having to separate them first for decoding followed by superimposition. (It should be clear to one of ordinary skill in the art that quantized DCT coefficients are an intermediate product of the JPEG compression process.)

3. Regarding claim 2, APA [P.2, lines 11-14] further discloses linking supplement information (recording time in this case) to its associated image by storing the information at the JPEG header of the image.

4. Claims 3, 4 and 16 are similarly analyzed and rejected as claim 1. (Regarding claim 16, it is by definition that quantization following discrete cosine transform makes

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the process irreversible since quantization is lossy, and that Huffman encoding is lossless, i.e., reversible.)

5. Regarding claim 5, Adler et al., Manjunath et al. and APA disclose everything except

- difference information generation means for generating difference information between first supplement information image data relating to first surveillance image data and second supplement information image data relating to second surveillance image data

However, Examiner takes Official Notice that MPEG compression process includes taking difference of two images and subsequently applying DCT, Quantization and a variable-length encoding (commonly the Huffman encoding), in other words, JPEG of the difference image.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined invention of Adler et al., Manjunath et al. and the prior art admission by generating the JPEG of the difference supplement information image in order to improve the compression ratio since the difference of successive images typically has a lower entropy.

6. Regarding claim 11, Adler further discloses an input means [Fig. 1, reference 101] for receiving images.

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7. Regarding claim 17, Manjunath further discloses combining the DCTs of the surveillance image and the supplement information image [Fig.15].

8. Regarding claim 18, it can be similarly analyzed as claim 17 except that the combination is applied to the quantized surveillance image and the supplement information image. However, Examiner takes Official Notice that quantization is well known in the art of image processing as a technique to reduce data size (by lowering the number of bits per pixel for its value) and the result is also more amenable to a variable-length encoding that may follow (such as is typical in JPEG encoding). While not as effective as JPEG in reducing image data size, it nonetheless achieves storage savings while avoiding the significant processing cost for computing DCT as required by JPEG.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined invention of Adler et al., Manjunath et al. and the admitted prior art by applying quantization to the images of interest before combining them in order to achieve modest storage saving while not incurring extra processing cost.

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9. Amended claims 6, 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adler et al. (US 6,275,599), Manjunath et al. (US 6,332,030) and APA as applied to amended claims 1-5, 11, 16-18 above, and further in view of Clark et al. (US 4,829,526).

10. Regarding claim 6, Adler et al., Manjunath et al. and APA disclose everything except

- feature value generation means for generating feature value peculiar to JPEG data for image display obtained by said Huffman encoding means; and
- feature value linking means for linking said JPEG data for image display to said feature value data

However, Clark et al. discloses a feature value (cyclic redundancy check, or CRC, code in this case) generation means that operates on the Huffman encoder outputs [Fig. 1, references 14, 16; Col. 2, lines 46-47] and interleaves (i.e., links) the CRC code and the Huffman encoder output [Fig. 1, reference 22; Col. 6, lines 11-14].

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined invention of Adler et al., Manjunath et al. and APA by calculating the CRC code of the output of the Huffman encoding process and linking the code to the output data as taught by Clark so that the integrity of the data can be validated and/or corrected after, say, being transmitted over a communication link or after being retrieved for reproduction from a medium where it has been previously recorded.

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11. Regarding claim 7, Clark et al. further discloses a separation means, a post-separation feature value generation mean, and a decision means [Fig. 1, references 48, 50, 56; Col. 6, lines 45-59].

12. Claim 9 is similarly analyzed and rejected as claim 6.

13. Amended claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adler et al. (US 6,275,599), Manjunath et al. (US 6,332,030), APA and Clark et al. (US 4,829,526) as applied to claims 1-7, 9, 11, 16-18 above, and further in view of Bodnar et al. (US 6,275,831).

Regarding claim 8, Adler et al., Manjunath et al., APA and Clark et al. disclose everything except for a decision means. However, Bodnar discloses a system where the absence of the feature value data (the CRC check sum in this case) is determined. [Col. 11, lines 6-9.]

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined invention of Adler et al., Manjunath et al., APA and Clark et al. by only optionally computing feature value data for linking and providing a way to determine the data's presence or absence in order to provide data integrity through the check sum only when circumstance requires it. This can improve

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efficiency in, for example, transmitting data over communication links when link noise or security is not a concern and therefore no checksum is needed.

14. Amended claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adler et al. (US 6,275,599), Manjunath et al. (US 6,332,030), APA (P. 2, lines 11-14 & 19-22) and Clark et al. (US 4,829,526) as applied to claims 1-7, 9, 11, 16-18 above, and further in view of Linnartz (US 6,314,518).

Regarding claim 10, Adler et al., Manjunath et al., APA and Clark et al. disclose everything except that the said feature value generation means generates a hash value. However, Linnartz discloses a system where hash values are computed for compressed images. [Col. 9, lines 22-24.]

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined invention of Adler et al., Manjunath et al., APA and Clark et al. by calculating the hash values of the compressed images in order to provide a measure to validate data integrity by using the has values as the digital signatures of the images.

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15. Amended claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adler et al. (US 6,275,599), Manjunath et al. (US 6,332,030) and APA as applied to claims 1-5, 11, 16-18 above, and further in view of Sadjadian (US 6,181,831).

16. Regarding claim 12, Adler et al. (US 6,275,599), Manjunath et al. (US 6,332,030) and APA disclose everything except for using addition as the combining means. However, Sadjadian discloses a matrix adder to generate combined output blocks [Fig. 7, reference 190; Col. 7, lines 38-40].

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined invention of Adler et al., Manjunath et al. and APA by using matrix addition as the combination means in order to take advantage of the linear property of the inverse quantizer and the inverse DCT to produce the sum (i.e., superimposition) of the original images without having to separate their combined, compressed versions first to save considerable processing time.

17. Claims 13, 14, 15 are similarly analyzed and rejected as claims 1, 11, 12 with the additional disclosure from Adler et al. regarding Huffman decoding [Fig. 2: reference 206; (Col. 3: lines 12-14 imply the use of Huffman decoding)].

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14. (New) Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adler et al. (US 6,275,599), Manjunath et al. (US 6,332,030) and APA as applied to claims 1-5, 11, 16-18, and further in view of Reasoner, Jr. et al. (US 5,768,446).

15. Regarding claim 25, Adler et al., Manjunath et al. and APA disclose:

- Linking means for linking encoded first and encoded second image data [Manjunath et al.: Fig. 7]
- Decoding means for executing Huffman decoding, followed by inverse quantization, followed by inverse DCT on encoded first encoded image data of said linked data [Adler et al.: Fig. 2, numerals 206, 205, 204. Note: Col. 3, lines 12-14 imply/suggest the use of Huffman decoding].
- Encoding means combines DCT encoded-then-quantized first and second images and then Huffman encode the first image data combined [Adler et al.: Fig. 1, numerals 102, 104-107; Col. 3 lines 11-14. Note that while Adler et al. does not expressly disclose that the second image ("watermark") is also DCT encoded and then quantized. It is obvious to one of ordinary skill in the art to do so since the same degree of data reduction for the first image can be achieved by doing the same]
- Said decoding means subtracts Huffman decoded second encoded image from Huffman decoded first encoded image data and then inversely quantizes, inversely DCT converts the result [Manjunath et al.: Fig. 6. Note that here the host image is the second image. Further note that since the result from the subtraction is the DCT transformed, quantized first image, the remaining decoding process comprises inverse quantization followed by inverse DCT conversion, as one of ordinary skill in the art would have done]

Adler et al., Manjunath et al. and APA do not expressly disclose the following:

- First and second encoding means for executing DCT, followed by quantization, followed by Huffman encoding to a first image
- Transmission means for transmitting linked data to a storage apparatus

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However, Reasoner, Jr. et al. discloses using multiple JPEG encoders [Fig. 1C; Col. 3, lines 8-13] and transmitting data to a storage [Fig. 1, numeral 1-20 (SRM); Col. 6, lines 17-20].

Adler et al., Manjunath et al., APA and Reasoner, Jr. et al. are combinable because they are from the same field of endeavor of image processing.

At time of the invention, it would have been obvious to one of ordinary skill in the art to modify Adler et al., Manjunath et al. and APA by using multiple encoders and to transmit encoded image data to a storage as taught by Reasoner, Jr. et al. The motivation would have been to improve the processing throughput. Therefore, it would have been obvious to combine Reasoner, Jr. et al. with Adler et al., Manjunath et al. and APA to obtain the invention as specified in claim 25.

16. Regarding claim 26, Adler et al., Manjunath et al., APA and Reasoner, Jr. et al.

disclose everything except the following:

- When the first image data comprising the second image data is to be displayed: decoding means executes inverse quantization, followed by inverse DCT on the Huffman decoded first image previously encoded without subtracting from it the Huffman decoded second image previous encoded [Adler et al.: Fig. 2, numerals 201, 204-206]
- When the first image data without the second image data is to be displayed: decoding means subtract from the Huffman decoded first image previously encoded the Huffman decoded second image previous encoded then executes inverse quantization, followed by inverse DCT [Manjunath et al.: Fig. 6 teaches subtracting the partially decoded second image from the partially decoded first image before completing the decoding]

Adler et al., Manjunath et al., APA and Reasoner, Jr. et al. do not expressly disclose having a judging means to decide whether or not a display mode is a mode which displays the first image data comprising the second image data.

However, since the combined invention of Adler et al., Manjunath et al., APA and Reasoner, Jr. et al. offers both modes, it would have been obvious to one of ordinary

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skill in the art at the time the invention was made to include such a judging means. The motivation for doing so would have been to give the user (or the system control) a way to realize the selected mode. (Note that even if the system defaults to one display mode or the other, it still is making a judgment; therefore a judging means is implied.) [Such a means has also been admitted in P. 2, lines 22-24 of the application.]

17. Regarding claim 27, APA further discloses:

- Said first image data comprises image data picked up by a camera
[P. 2, line 12]
- Said second image data comprises character image data relating to said first image data
[P. 2, lines 19-20]

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

19. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

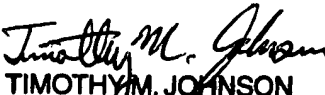
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (703) 305-1896. The examiner can normally be reached on 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yubin Hung
Patent Examiner
March 19, 2004


TIMOTHY M. JOHNSON
PRIMARY EXAMINER